NEWS RELEASE

New material and design concepts for Plastic/Metal Hybrid Technology

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Better performance, less material

Pittsburgh – Hybrid technology, also known as plastic/metal composite technology, has long since established itself in the automotive industry as a method for manufacturing lightweight structural components. For example, it is now also being used at BMW, with the front ends of the BMW 1 Series and BMW 3 Series being manufactured from a combination of the polyamide 6 (PA 6) Durethan® BKV 30 H2.0 from LANXESS Corporation and sheet steel. In order to optimize the performance capabilities of hybrid technology, LANXESS has developed new material concepts and advanced simulation tools. "We can now reduce the wall thickness and weight of hybrid components even further and attempt to exploit the materials used as best as possible. If possible, plastic should only be utilized where it is needed and in the required quantity," explains Tim Palmer, a senior design engineer in hybrid technology from the Semi-Crystalline Products Business Unit.

Although the glass fiber-reinforced polyamide used as the plastic exhibits good flowability, the material does come up against its limits in large hybrid components if the wall thicknesses are to be reduced even further. Yet the new PA 6 Durethan® BKV 30 EF from LANXESS (EF stands for Easy Flow) opens up a whole new range of possibilities. Its flowability is around 50 percent higher than that of a comparable standard PA 6, without adversely affecting the elasticity modulus, stiffness, elongation at break or flow line strength.

LANXESS utilizes topology optimization software to ensure the very best component design. This allows design engineers to ascertain the best position for the polyamide ribs to ensure optimum component stiffness. The method has been so successful that LANXESS now uses it for all hybrid designs.

LANXESS has also developed a new evaluation procedure with which material data from high-speed trials can be defined exactly for crash simulations. The procedure, based on reverse engineering, enables the material parameters governed by the rate of elongation to be calculated from rapid tensile tests. This provides a highly reliable means of simulating the crash behavior of hybrid parts even before the prototype has been built. "With the Easy Flow polyamide and optimized simulation processes, we can reduce the wall thickness of a hybrid component by around 20 percent over a standard design, which leads to more lightweight, cost-effective parts. The component characteristics remain at their normal high level," says Palmer.

A further material innovation for hybrid technology is a highly filled PA 6 grade made up of about 60 percent glass fibers by weight. It is derived from Easy Flow Durethan® and displays the same flowability as a standard PA 6 with 30 percent glass fibers. The material can therefore be processed in existing plants under almost the same conditions. "The key feature of the material is its high stiffness. At room temperature, the tensile modulus is 20,000 Megapascals (MPa) – more than twice that of a standard PA 6 with 30 percent glass fibers," says Norm Brozenick, LANXESS program management. Structural components made of this material require the same space, but are stiffer and more stress resistant. This means there is no need for an additional sheet metal profile in certain areas.

In addition to utilizing steel sheeting, LANXESS is also working on using aluminum sheeting to design even lighter hybrid components. To this end, the company is collaborating with an aluminum manufacturer.

LANXESS offers manufacturers of hybrid components an extensive service, ranging from designing the component structure and performing finite element calculations to optimize and determine the load-bearing capacity of the molding right through to simulating mold filling and warping. "We also support our customers in designing the mold – from the prototype phase through mold proving to the start of series production," says Brozenick.

LANXESS Corporation was formed when the Bayer Group combined most of its chemical businesses and large segments of its polymer activities. The company began operating as a separate legal entity in the United States on July 1, 2004. LANXESS Corporation is a member of the German LANXESS-Group that was spun-off from Bayer in January 2005.

The LANXESS-Group manufactures high quality products in the areas of chemicals, synthetic rubber and plastics. The companies' portfolio comprises basic and fine chemicals, color pigments, plastics, fibers, synthetic rubber and rubber chemicals, leather, textile processing chemicals, paper chemicals, material protection products and water treatment products.

In 2004, LANXESS Corporation employed about 2,100 persons in the United States.

For more information, or to receive a copy of “Plastic/Metal Hybrid Technology: Today’s Innovative Value-Added Opportunity,” please contact 1-800-LANXESS, visit www.us.lanxess.com or call Norm Brozenick at 412-809-3562 or Tim Palmer at 412-809-3556.

Information for editors:
All our news releases and photos can be found on the LANXESS homepage at www.us.lanxess.com under the "News" button.

Forward-looking statements
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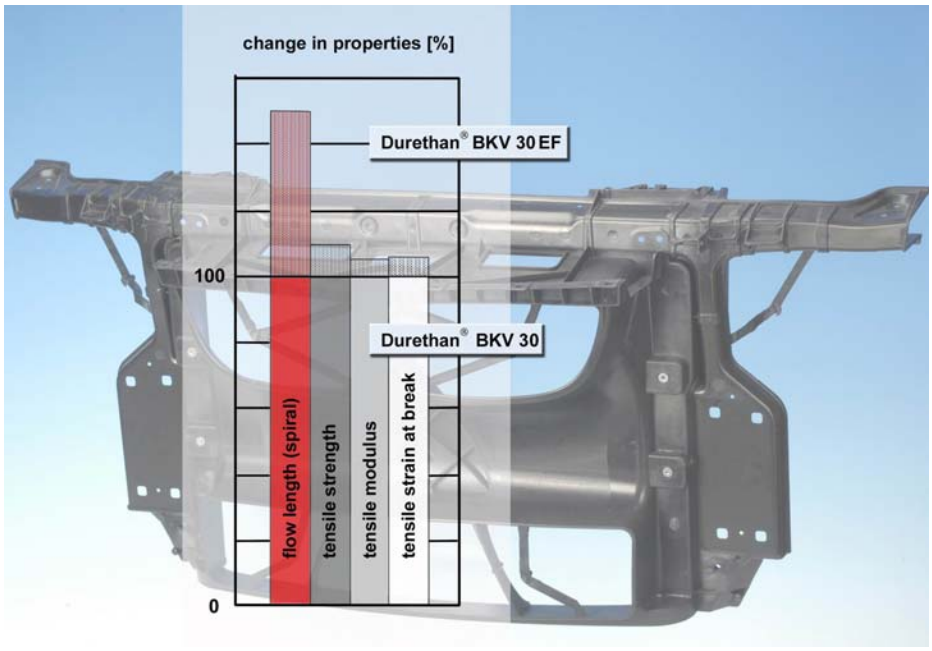

The flowability of Durethan® BKV 30 EF is around 50 percent higher than that of a comparable standard PA 6. The elasticity modulus, tensile strength and elongation at break characteristics remain on their normal high level.